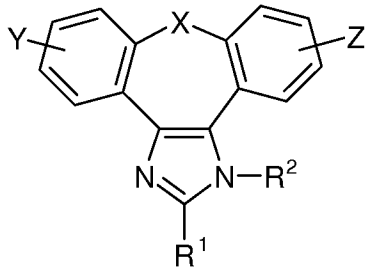
CLAIMS

1. A method of treating a disease, damage or disorder of the central nervous system associated with a disorder of neurochemical equilibrium of a biogenic amine or other neurotransmitter, comprising administering to a subject in need thereof a compound of formula **I**



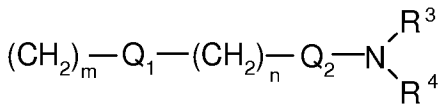
I

wherein

X is selected from the group consisting of CH_2,O, S, S(=O), $S(=O)_2$ and NR^a, wherein R^a is selected from the group consisting of hydrogen, C_1-C_3-alkyl, C_1-C_3-alkanoyl, C_1-C_7-alkoxycarbonyl, C_7-C_{10}-arylmethoxycarbonyl, C_7-C_{10}-aroyl, C_7-C_{10}-arylalkyl, C_3-C_7-alkylsilyl and C_5-C_{10}-alkylsilylalkoxyalkyl;

Y and Z are each independently selected from the group consisting of hydrogen, halogen, C_1-C_4- alkyl, C_2-C_4-alkenyl, C_2-C_4-alkynyl, halo-C_1-C_4-alkyl, hydroxy, C_1-C_4-alkoxy, trifluoromethoxy, C_1-C_4-alkanoyl, amino, amino-C_1-C_4-alkyl, *N*-(C_1-C_4-alkyl)amino, *N,N*-di(C_1-C_4-alkyl)amino, thiol, C_1-C_4-alkylthio, sulfonyl, C_1-C_4-alkylsulfonyl, sulfinyl, C_1-C_4-alkylsulfinyl, carboxy, C_1-C_4-alkoxycarbonyl, cyano and nitro;

R^1 is selected from the group consisting of CHO, $CH=CHOCOCH_3$, $(CH_2)_mOH$ wherein m is an integer from 1 to 3, and a substituent of the formula **II**:



II

wherein

R^3 and R^4 are each independently C_1-C_4-alkyl or aryl; or

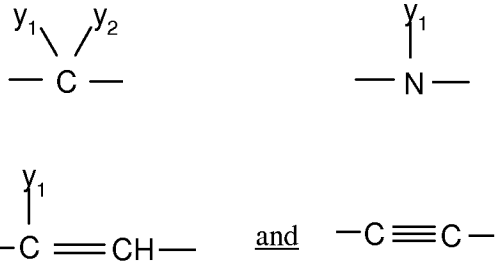
R^3 and R^4 taken together with the nitrogen atom to which they are attached form a heterocycle or heteroaryl group that is optionally substituted with one or two substituents which are selected from the group consisting of halogen, C_1-C_4 alkyl, cyano,

nitro, hydroxy, C_1-C_4 alkoxy, thiol, C_1-C_4 alkylthio, amino, *N*-(C_1-C_4) alkylamino, *N,N*-di(C_1-C_4-alkyl)-amino, sulfonyl, C_1-C_4 alkylsulfonyl, sulfinyl, and C_1-C_4 alkylsulfinyl;

m is an integer from 1 to 3;

n is an integer from 0 to 3;

Q_1 and Q_2 are each independently selected from the group consisting oxygen, sulfur,



and

wherein substituents

y_1 and y_2 are each independently selected from the group consisting of hydrogen, halogen, C_1-C_4-alkyl optionally substituted with one or more substituents selected from the group consisting of halogen, hydroxy, C_1-C_4 alkoxy, thiol, C_1-C_4 alkylthio, amino, N-(C_1-C_4) alkylamino, N,N-di(C_1-C_4-alkyl)-amino, sulfonyl, C_1-C_4 alkylsulfonyl, sulfinyl and C_1-C_4 alkylsulfinyl; hydroxy, C_1-C_4-alkoxy, C_1-C_4-alkanoyl, thiol, C_1-C_4-alkylthio, sulfonyl, C_1-C_4-alkylsulfonyl, sulfinyl, C_1-C_4-alkylsulfinyl, cyano, nitro, and an aryl group wherein said ary group is optionally substituted with one or two substituents selected from the group consisting of fluoro, chloro, C_1-C_4 alkyl, cyano, nitro, hydroxy, C_1-C_4 alkoxy, thiol, C_1-C_4 alkylthio, amino, *N*-(C_1-C_4) alkylamino, *N,N*-di(C_1-C_4-alkyl)-amino, sulfonyl, C_1-C_4 alkylsulfonyl, sulfinyl, C_1-C_4 alkylsulfinyl and is linked to the rest of the molecule via a direct bond or a C_1-C_4 alkylene group; or

y_1 and y_2 taken together with the carbon atom to which they are attached form a carbonyl group or an imino group;

R^2 is selected from the group consisting of hydrogen, a C_1-C_7-alkyl group optionally substituted with one or more substituents selected from the group consisting of halogen, hydroxy, C_1-C_4 alkoxy, thiol, C_1-C_4 alkylthio, amino, N-(C_1-C_4) alkylamino, N,N-di(C_1-C_4-alkyl)-amino, sulfonyl, C_1-C_4 alkylsulfonyl, sulfinyl and C_1-C_4 alkylsulfinyl; ~~or~~ an aryl group optionally substituted with one or two substituents selected from the group consisting of fluoro, chloro, C_1-C_4 alkyl, cyano, nitro, hydroxy, C_1-C_4 alkoxy, thiol, C_1-C_4 alkylthio, amino, *N*-(C_1-C_4) alkylamino, *N,N*-di(C_1-C_4-alkyl)-amino, sulfonyl, C_1-C_4 alkylsulfonyl, sulfinyl, C_1-C_4 alkylsulfinyl; C_1-C_7-alkanoyl, C_1-C_7-alkoxycarbonyl, C_7-C_{10}-

arylalkyloxycarbonyl, C_7-C_{10}-aroyl, C_7-C_{10}-arylalkyl, C_3-C_7-alkylsilyl, $C_6H_5CH_2CH_2$ and $CH_2OCH_2CH_2Si(CH_3)_3$;

and of their a pharmaceutically acceptable salt or solvate thereof .

2. The method of claim 1, wherein the biogenic amine is serotonin, norepinephrine or dopamine.

3. The method of claim 1, wherein the neurotransmitter is glutamate.

4. The method of claim 1, wherein the compound of formula **I** regulates the synthesis, storage, release, metabolism, reabsorption, or receptor binding of said biogenic amine or ~~s~~ neurotransmitter.

5. The method of claim 4, wherein the compound of formula **I** binds to a receptor of a biogenic amine.

6. The method of claim 5, wherein the compound of formula **I** binds to a serotonin 5-HT_{2A} or 5-HT_{2C} receptor.

7. The method of claim 6, wherein the compound of formula **I** binds to a serotonin 5-HT_{2A} or 5-HT_{2C} receptor with an IC_{50} of less than 1μM.

8. The method of claim 1, wherein the compound of formula **I** binds to a σ1 receptor with an IC_{50} of less than 1 μM.

9. The method of claim 1, wherein the compound of formula **I** bind to a σ1 receptor and to at least one serotonin receptor selected from 5-HT_{2A} and 5-HT_{2C}.

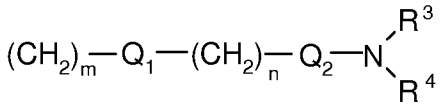
10. The method of claim 1, wherein the disease or disorder of the central nervous system is selected from the group consisting of anxiety, depression, bipolar disorders, sleeping disorders, sexual disorders, psychosis, borderline psychosis, schizophrenia, migraine, personality disorders, obsessive-compulsive disorders, social phobia, panic attacks, organic mental disorders in children, aggression, memory disorders, personality disorders in elderly people, addiction, obesity, bulimia and other eating disorders, snoring, and premenstrual troubles.

11. The method of claim 1, wherein the damage to the central nervous system is caused by trauma, brain stroke, neurodegenerative diseases, cardiovascular disorders, thrombosis, infarct or gastrointestinal disorders.

12. The method of claim 1 wherein X is O, S, or NR^a, wherein R^a is hydrogen or a substituent selected from the group consisting of C_1-C_3-alkyl, C_1-C_3-alkanoyl, C_7-C_{10}-aroyl, and C_7-C_{10}-arylalkyl.

13. The method of claim 1, wherein Y and Z are each independently selected from the group consisting of hydrogen, fluorine, chlorine, bromine, C_1-C_4-alkyl, halo-C_1-C_4-alkyl, hydroxy, C_1-C_4-alkoxy, trifluoromethoxy, C_1-C_4-alkanoyl, amino, amino-C_1-C_4-alkyl, *N*-(C_1-C_4-alkyl)amino, *N,N*-di(C_1-C_4-alkyl)amino, thiol, C_1-C_4-alkylthio, cyano and nitro.

14. The method of claim 1, wherein R^1 is selected from the group consisting of CHO, $CH{=}CHOCOCH_3$, $(CH_2)_mOH$ wherein m is an integer from 1 to 3; ~~or~~ and a substituent of the formula **II**:



II

wherein

R^3 and R^4 are each independently hydrogen, C_1-C_4-alkyl, or aryl or

R^3 and R^4 taken together with the nitrogen atom to which they are attached form a heterocycle or heteroaryl group selected from the group consisting of morpholine-4-yl, piperidine-1-yl, pyrrolidine-1-yl, imidazole-1-yl and piperazine-1-yl;

m is an integer from 1 to 3;

n is an integer from 0 to 3; and

Q_1 and Q_2 are each independently oxygen or CH_2.

15. The method of claim 1, wherein the compound of formula **I**, is selected from the group consisting of:

1-methyl-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulene-2-carbaldehyde;

1-methyl-1H-8-thia-1,3-diaza-dibenzo[e,h]azulene-2-carbaldehyde;

1-phenethyl-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulene-2-carbaldehyde;

1-phenethyl-1H-8-thia-1,3-diaza-dibenzo[e,h]azulene-2-carbaldehyde;

1-(2-trimethylsilyl-ethoxymethyl)-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulene-2-carbaldehyde;

1-(2-trimethylsilyl-ethoxymethyl)-1H-8-thia-1,3-diaza-dibenzo[e,h]azulene-2-carbaldehyde;

5-chloro-1-(2-trimethylsilyl-ethoxymethyl)-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulene-2-carbaldehyde;

11-chloro-1-(2-trimethylsilyl-ethoxymethyl)-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulene-2-carbaldehyde;

5-chloro-1-(2-trimethylsilyl-ethoxymethyl)-1H-8-thia-1,3-diaza-dibenzo[e,h]azulene-2-carbaldehyde;

11-chloro-1-(2-trimethylsilyl-ethoxymethyl)-1H-8-thia-1,3-diaza-dibenzo[e,h]azulene-2-carbaldehyde;

3-(1-phenethyl-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-yl)-acrylic acid methyl ester;

(1-methyl-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-yl)-methanol;

(1-methyl-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-yl)-methanol;

(1-phenethyl-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-yl)-methanol;

(1-phenethyl-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-yl)-methanol;

[1-(2-trimethylsilyl-ethoxymethyl)-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-yl]-methanol;

[1-(2-trimethylsilyl-ethoxymethyl)-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-yl]-methanol;

[5-chloro-1-(2-trimethylsilyl-ethoxymethyl)-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-yl]-methanol;

[11-chloro-1-(2-trimethylsilyl-ethoxymethyl)-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-yl]-methanol;

[5-chloro-1-(2-trimethylsilyl-ethoxymethyl)-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-yl]-methanol;

[11-chloro-1-(2-trimethylsilyl-ethoxymethyl)-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-yl]-methanol;

3-(1-phenethyl-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-yl)-propane-1-ol;

dimethyl-[2-(1-methyl-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-ethyl]-amine;

dimethyl-[3-(1-methyl-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-propyl]-amine;

dimethyl-[2-(1-methyl-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-ethyl]-amine;

dimethyl-[3-(1-methyl-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-propyl]-amine;

dimethyl-[2-(1-phenethyl-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-ethyl]-amine;

dimethyl-[3-(1-phenethyl-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-propyl]-amine;

dimethyl-[2-(1-phenethyl-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-ethyl]-amine;

dimethyl-[3-(1-phenethyl-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-propyl]-amine;

dimethyl-{2-[1-(2-trimethylsilyl-ethoxymethyl)-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy]-ethyl}-amine;

dimethyl-[2-(1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-ethyl]-amine;

dimethyl-{3-[1-(2-trimethylsilyl-ethoxymethyl)-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-ylmethoxy]-propyl}-amine;

dimethyl-[3-(1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-propyl]-amine;

3-[1-(2-trimethylsilyl-ethoxymethyl)-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy]-propylamine;

3-(1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-propylamine;

dimethyl-{2-[1-(2-trimethylsilyl-ethoxymethyl)-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy]-ethyl}-amine;

dimethyl-[2-(1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-ethyl]-amine;

dimethyl-{3-[1-(2-trimethylsilyl-ethoxymethyl)-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy]-propyl}-amine;

dimethyl-[3-(1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-propyl]-amine;

{3-[5-chloro-1-(2-trimethylsilyl-ethoxymethyl)-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy]-propyl}-dimethyl-amine;

[3-(5-chloro-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-propyl]-dimethyl-amine;

3-[5-chloro-1-(2-trimethylsilyl-ethoxymethyl)-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy]-propylamine;

3-(5-chloro-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-propylamine;

{2-[11-chloro-1-(2-trimethylsilyl-ethoxymethyl)-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy]-ethyl}-dimethyl-amine;

[2-(11-chloro-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-ethyl]-dimethyl-amine;

{3-[11-chloro-1-(2-trimethylsilyl-ethoxymethyl)-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy]-propyl}-dimethyl-amine;

[3-(11-chloro-1H-8-oxa-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-propyl]-dimethyl-amine;

{2-[5-chloro-1-(2-trimethylsilyl-ethoxymethyl)-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy]-ethyl}-dimethyl-amine;

[2-(5-chloro-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-ethyl]-dimethyl-amine;

{3-[5-chloro-1-(2-trimethylsilyl-ethoxymethyl)-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy]-propyl}-dimethyl-amine;

[3-(5-chloro-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-ylmethoxy)-propyl]-dimethyl-amine;

dimethyl-{3-[3-(1-phenethyl-1H-8-thia-1,3-diaza-dibenzo[e,h]azulen-2-yl)-propoxy]-propyl}-amine; and

a pharmaceutically acceptable salt or solvate thereof.